GENERAL INFRASTRUCTURE ELEMENT

NOTE: Unless otherwise noted, the goals, objectives and policies contained in this element shall guide development of the Main Campus and Southwest Campus in Tallahassee as well as the Panama City Campus in Panama City, Florida.

STORMWATER MANAGEMENT SUB-ELEMENT

Goal 1

To ensure provision of adequate stormwater management to protect the residents of both the University and the host community, and to prevent water damage to private and public properties. See Figures 9.1.1 through 9.1.2.

Objective 1A

Upgrade and expand the existing stormwater management system to correct existing deficiencies and to meet future needs.

Policy 1A-1

Coordinate with the City of Tallahassee and Leon County to operate/maintain a regional stormwater facility to address stormwater needs of the campus.

Policy 1A-2

- -The University -has continued to coordinate the existing and future system needs, as a result of proposed land redevelopment, transportation system improvements, reconfiguration of existing drainage conveyances, and improvements within the floodplain – with the City of Tallahassee . No new analysis or improvements are identified by the City on the Main Campus. Additionally, FSU has prepared a study of stormwater strategies for development of the Southwest Campus. This study – *"Florida State University – Southwest Campus Conceptual Stormwater Master Plan"* has been approved by the City of Tallahassee as the outline of stormwater management for the Southwest Campus. -These efforts have addressed the data and analysis requirements contained in Rules 6C-21.207, F.A.C., and have also:

- Established priorities for replacement, correcting stormwater management facility deficiencies, and providing for future facility needs; and

- Established the timing and phasing requirements and identify the projected funding sources for stormwater management facility improvements to meet future FSU needs.

Policy 1A-3
FSU shall continue to work with the host local government compliance with the requirements of Administrative Rule 6C-21.207 F.A.C. The City of Tallahassee shall be allowed to review plans for proposed campus stormwater improvements and proposed development which affects the stormwater management system in accordance with the Campus Development Agreement between the Board of Regents and the City of Tallahassee, executed December 11, 1998 and subsequent agreements, until the successor campus development agreement is executed.

Policy 1A-4
FSU met with the City of Tallahassee in 2009 and 2010 to discuss needs for further analysis of the Main Campus and the Southwest Campus. No additional study was necessary for the Main Campus. The aforementioned *"Florida State University – Southwest Campus Conceptual Stormwater Master Plan"* has been prepared in the planning timeframe, submitted to the host government and approved by the City of Tallahassee as the outline of stormwater management for the Southwest Campus -.

Policy 1A-5
Investigate opportunities for retrofit of existing stormwater system to current requirements.

Policy 1A-6
The University shall adopt a level of service standard for stormwater quality and quantity as established in Rules 62-302 (surface water quality standards) and 62-25 (stormwater discharge), F.A.C. Stormwater management facilities shall also be adequate to provide the following levels of service with regard to flood control:

<u>100 Year critical Storm Event</u>

- No floodwater in new buildings or existing buildings.

- Overland flow capacities available for all flow in excess of capacity of underground and open channel conveyance systems.

25 Year or Less Critical Storm Event

- No floodwater more than six inches deep in local roads, parking lots, or other non-street vehicular use areas.

- No flood waters in one driving lane each direction of collector streets.

- Open channel conveyance capacity available for all flow in excess of capacity of underground conveyance system, or for full twenty-five year storm flow if no underground system exists.

- The rate of off-site discharge shall not exceed the predevelopment rate of discharge.

10 Year or Less Critical Storm Event

- No floodwater in one driving lane of local roads.

- No flood waters in the driving lanes of any road other than a local road.

- Underground conveyance not overflowing in business and commercial districts.

5 Year or Less Critical Storm Event

- No floodwater in the driving lanes of any roadways.

- Underground conveyances not overflowing in residential districts.

These are the adopted levels of service and shall be used as the basis for determining the availability of facility capacity and the system demand generated by development. In instances

where an off-site deficiency exists at the time of adoption of this policy, such deficiency shall not be increased as the result of any development or land use changes.

Policy 1A-7
It shall be the intent of FSU to keep floodways free of structures that would compound flooding problems. FSU shall not develop or redevelop campus land, remove or expand campus streets, reconfigure existing stormwater conveyances, or make other improvements within the 100-year floodplain that would have the effect of increasing the 100-year flood stages and boundaries, or otherwise compound flooding problems of non-University properties, based on a 1994 existing condition. Furthermore, it is the intent of the University to comply with National Flood Insurance Program and Community Rating System standards applicable to the City, based upon current standards.

Policy 1A-8
Stormwater management facilities shall comply with the design criteria of the Florida State University Supplemental Cost Containment Guidelines.

Policy 1A-9
FSU shall have the option of using its allocated capacity of the joint FSU / City regional stormwater facility to satisfy the need generated by new construction for stormwater attenuation and treatment.

Policy 1A-10
Evaluate additional Main Campus stormwater needs on a case-by-case basis, using the planned regional stormwater facility first.

Policy 1A-11
Continue to coordinate with the City of Tallahassee and Leon County to ensure provision of on- and off-campus stormwater management facilities required to meet future University needs.

Policy 1A-12
Annually review future construction programs and priorities for deficiency remediation as part of the capital improvements requirements and procedures of the University to ensure capacity.

Policy 1A-13
Improve, expand, and upgrade the stormwater management system as identified in the engineering study referenced.

Policy 1A-14
The timing and phasing requirements for identified stormwater management facility improvements are reflected in the Capital Improvements Element.

Objective 1B
Protect natural drainage and hydrological areas.

Policy 1B-1
Use environmentally-friendly designs, such as detention systems, metered-release devices, porous or vegetative liners, minimize impervious surfaces, etc., as appropriate and as called for by state design guidelines, to protect natural stormwater management and hydrological areas from erosion and contamination and to mitigate impacts of University-generated stormwater.

Policy 1B-2
It shall be the policy of the University that no stormwater discharges may cause or contribute to a violation of water quality standards in waters of the State.

Policy 1B-3
FSU shall continue to mitigate University-generated stormwater and minimize stormwater-borne pollutants through the implementation of a system of Best Management Practices (BMPs), which includes, but is not limited to:

1. Incorporating stormwater management retention and detention features into the design of parks, trails, commons, and open spaces, where such features do not detract from the recreational or aesthetic value of a site.

2. Use of slow release fertilizers and/or carefully managed fertilizer applications timed to ensure maximum root uptake and minimal surface water runoff or leaching to groundwater.

3. Educating maintenance personnel about the need to maintain motor vehicles to prevent the accumulation of grease, oil and other fluids on impervious surfaces, where they might be conveyed to surface and ground waters by runoff, and the need to regularly collect and dispose of yard debris.

4. Avoid the widespread application of broad-spectrum pesticides by involving only purposeful and minimal application of pesticides, aimed at identified target species.

5. Coordinating pesticide application with irrigation practices to reduce runoff and leaching into groundwater.

6. Use of turf blocks and non-impervious surface treatments to minimize impervious surface area and reduce the flow of runoff pollutants.

7. Incorporating features into the design of fertilizer and pesticide storage, mixing and loading areas that are designed to prevent or minimize spillage.

8. Pursue licensing for grounds superintendents and staff to use restricted pesticides and to ensure that fertilizers will be selected and applied to minimize surface water runoff and leaching to ground water.

Policy 1B-4
The FSU Facilities Department shall review all proposed construction and development on campus to ensure that any proposed increase in campus impervious surfaces shall be implemented only upon a finding that existing facility capacity is already on-line to

accommodate the increased need, or that additional capacity will be funded and on-line at the time of need.

POTABLE WATER SUB-ELEMENT

Goal 2

To provide adequate water facilities and services, both potable and fire, to support the mission of the University and to meet future needs.

Objective 2A

Upgrade and expand the existing potable water and fire flow systems to correct existing deficiencies and to meet future needs.

Policy 2A-1

Backflow preventers shall be required for all new construction.

Policy 2A-2

By 2008, perform an update to the survey of all buildings and facilities to determine quantity of water used and the range of hazards to the water supply system based on functions accommodated and then continues existing programs and schedules to retrofit existing lines with backflow preventers. Establish priority for retrofitting based on degree of hazard and quantity of water use. The adopted Campus Master Plan will be amended as necessary to include the results of the study and the schedule for the retrofit program.

Policy 2A-3

Water loss and resulting costs should be minimized by maintaining watertight lines. FSU shall continue its leak detection and elimination program with priority assigned to older portions of the campus.

Policy 2A-4

The University shall continue to work with the City fire department to conduct on-site fire flow tests to verify adequacy of fire flows or identify deficiencies. The tests shall be conducted in accordance with the methodology described in the American Water Works Association Manual Number 31, entitled "Distribution System Requirements for Fire

Protection" and the National Fire Prevention Association (NFPA) Standard 291, entitled "Recommended Practice for Fire Flow Testing and Marking of Hydrants."

Policy 2A-5
Improve, expand, and upgrade the potable water system as identified as required to serve future construction projects.

Objective 2B
Monitor / update per capita (campus population) water consumption from available records.

Policy 2B-1
Monitor on a regular schedule (at least annually), total campus water consumption versus total campus population. Determine peak and average consumption rates.

Objective 2C
Coordinate closely with the City on present and future projected water demands of the University.

Policy 2C-1
The University shall continue to follow the procedure and assign responsibility for regularly scheduled coordination meetings with appropriate City officials relative to University water needs. FSU shall pursue any interlocal agreements or memoranda of understanding necessary to ensure that potable water will be supplied to the campuses to meet the future needs of the University.

Policy 2C-2
Annually review future construction programs and priorities identified for deficiency remediation as part of the capital improvements requirements and procedures to ensure that potable water facility improvements required to meet future University needs are in place and operational, at the adopted levels of service, prior to occupancy of any new University building.

Policy 2C-3
Future plans for potable water system extensions, replacements, relocations and improvements for extensions up to 12 inches in size that connect to the City's water system shall be reviewed and approved by the City's Water and Sewer Department prior to construction. Plans for water mains and extensions larger than 12 inches in diameter shall be reviewed and approved jointly by the Florida Department of Environmental Protection and by the City.

Objective 2D
Protect and conserve potable water sources.

Policy 2D-1
The University shall investigate the feasibility of using recycled water and/or existing groundwater wells for irrigation.

Policy 2D-2
The use of xeric landscaping techniques, including the maintenance or installation of selected vegetative species, low irrigation and compact hydrazone concepts, shall be considered for all new building and ancillary facility construction.

Policy 2D-3
The University shall continue to promote a water conservation emphasis, awareness and educational program.

Policy 2D-4
The University shall require the use of efficient low water volume plumbing fixtures in new and renovated University buildings.

Objective 2E
Establish minimum levels of service to be maintained for potable and fire flow water.

Policy 2E-1
Water quality must meet State and local Health Department and other regulatory agency's requirements.

Policy 2E-2
Design new system components and maintain existing system to achieve a minimum static pressure in all water lines of not less than 60 psi; a minimum pressure of 30 psi at building plumbing fixtures; and a minimum fire flow of at least 1,500 GPM at each of 2 separate hydrants with a minimum residual pressure of 25 psi. System improvements identified in Figures 9.2.1 through 9.2.8 are designed to achieve and maintain these standards.

Policy 2E-3
The University shall establish and adopt a level of service (LOS) for potable water systems consistent with the City of Tallahassee's LOS standard of 160 gallons per capita per day (GPCD) for average daily demand.

Policy 2E-4
Proposed increases in consumptive uses, whether residential or non-residential, shall be approved only upon a finding that existing potable water treatment and distribution facility capacity is already on-line to accommodate the increased need, or that additional capacity will be funded and on-line when needed.

SANITARY SEWER SUB-ELEMENT

Goal 3
To provide adequate sanitary sewage facilities and services to support the mission of the University and to meet future needs.

Objective 3A
Continue to work with the City to identify and eliminate deficiencies in the sewer collection system and enhance overall system performance.

Policy 3A-1
Stormwater and similar non-sanitary connections to sewer lines will not be permitted. Eliminate existing connections such as roof drains, yard drains, pool drains, etc.

Policy 3A-2
Sewer mains, gravity and pressure, will not be located under buildings or structures except when specifically approved by FSU Facilities Department. Realign and re-route existing trunk mains under buildings where feasible.

Policy 3A-3
Sewer lines must be water tight to prevent ground water infiltration with resulting reduction in capacity.

Policy 3A-4
The University shall implement a television inspection program of existing FSU owned lines to identify leaks, broken pipes and other deficiencies. Considerations shall be given to a joint program with the City.

Policy 3A-5
Replace or repair sewer lines that have failed (leaking) joints, broken pipe, root penetration and that have insufficient capacity and/or are on a less than minimum slope. Place particular emphasis in the "older" eastern portion of campus.

Policy 3A-6
The following priorities are established for sanitary sewer facility improvements necessary to enhance the existing sanitary sewer system and correct identified deficiencies:

1. Stormwater and similar non-sanitary connections to sewer lines will not be permitted. Eliminate existing connections such as roof drains, yard drains, pool drains, etc.

2. Sub-meter existing systems where water consumption does not end up in sewers. New systems shall be designed so that sub-meters are not necessary.

3. Sewer lines must be water tight to prevent ground water infiltration with resulting reduction in capacity.

4. Existing lines shall be inspected to identify leaks, broken pipes and other deficiencies.

5. Replace or repair sewer lines that have failed (leaking) joints, broken pipe, root penetration and that have insufficient capacity and/or are on a less than minimum slope. Place particular emphasis in the "older" eastern portion of campus.

6. Abandon existing trunk mains under buildings where feasible.

Objective 3B
Clarify ownership and maintenance of plant between City and University.

Policy 3B-1
Develop new GIS based sewer maps and coordinate with city to identify ownership and maintenance responsibility.

Objective 3C
Establish methods of determining quantities of sewage generated on campus and capacity in sewer lines available to the University.

Policy 3C-1
Where feasible and acceptable to the City, sub-meter usage is needed where water consumption does not end up in sewers.

Policy 3C-2
Coordinate with the City to obtain accurate information from their ongoing flow measurements in strategic manholes and pump stations. The University shall utilize this information to determine the impact on the campus. This should be a cooperative joint effort between the City and the University. The City of Tallahassee has the instruments, equipment and capability to implement this program.

Policy 3C-3
Meter sewage pumping stations to record quantities.

Objective 3D
Coordinate closely with the City on present and future projected sewage quantities generated on the campus.

Policy 3D-1
The University shall pursue any interlocal agreements or memoranda of understanding necessary to ensure that sanitary sewer will be supplied to the campuses to meet the future needs of the University.

Policy 3D-2
Annually review future construction programs and priorities for deficiency remediation as part of the capital improvements requirements and procedures of the Florida Department of Education, Board of Governors to ensure capacity and capital improvements required to meet future University needs are provided when required, based on needs identified in other master plan elements.

Policy 3D-3
Future plans for sanitary sewer system extensions, replacements, relocations and improvements for extensions up to 12 inches in size that connect to the City's sewer system shall be reviewed and approved by the City's Water and Sewer Department prior to construction. Plans for sewer mains in excess of 12 inches in diameter shall be reviewed and approved by the Florida Department of Environmental Protection and by the City.

Objective 3E
Establish minimum levels of service to be maintained for sewage collection facilities.

Policy 3E-1
Sewer facilities shall comply with the requirements and standards of the Florida Department of Environmental Protection and the City of Tallahassee. System improvements identified in this Master Plan are designed to achieve and maintain these standards.

Policy 3E-2

Gravity lines shall be sized for peak discharge flowing full. Designs for new or existing collection systems shall not use surcharge gravity sewers.

Policy 3E-3

The minimum allowable slope of gravity lines shall be in accordance with City and Florida Department of Environmental Protection Rules, Standards and Specifications.

Policy 3E-4

The University shall establish and adopt a level of service for sanitary sewer systems consistent with the standards of the City of Tallahassee which are currently stated as follows:

- 140 gallons per capita per day (GPCD) for average daily flow for systems serving mixed land uses;
- 100 gallons per capita per day (GPCD) for average daily flow for systems serving only residential land uses.

Objective 3F

To reduce the impacts of sewage generation.

Policy 3F-1

The University shall implement, where practical, the following techniques for reducing impacts of sewage generated on the campus:

- Utilizing low volume plumbing fixtures.
- Implementing a leak detection and repair program.
- Eliminating stormwater, swimming pool and other unsuitable connections.

SOLID WASTE SUB-ELEMENT

Goal 4

To provide adequate solid waste disposal services and facilities to support the mission of the University and to meet future needs.

Objective 4A

Improve efficiency and reduce cost of solid waste disposal.

Policy 4A-1

Monitor waste load per dumpster pick-up at strategic locations to identify quantity of waste per pick-up.

Policy 4A-2

Locate dumpsters and schedule City pick-ups to achieve maximum possible waste load dumpster pick-up. Future service areas are identified within this Master Plan.

Policy 4A-3

Improve and economize private vendor contracts for hazardous waste disposal.

Policy 4A-4

Maximize recycling activities. FSU shall expand, enhance, and promote an on-campus recycling awareness and emphasis campaign. Recycling containers shall be located at numerous convenient locations across the campus. FSU shall promote recycling through increased educational efforts directed towards faculty, students and staff.

Policy 4A-5

Continue and increase composting of vegetation refuse.

Policy 4A-6

Develop and continually enhance the operation of a campus-wide Recycling Center.

Objective 4B

Increase safety and reduce potential dangers from handling and disposal of hazardous waste.

Policy 4B-1
Provide hazardous material storage facilities that are safe and that comply with all regulatory requirements.

Policy 4B-2
Monitor and track hazardous material from arrival on campus through use, post-use storage and final disposal.

Policy 4B-3
Continue to monitor volume and type of hazardous waste collection and temporary storage on site to determine feasibility of constructing and operating the next higher level of storage facility on campus. If such a determination is made to proceed, amend the Plan to reflect the timing, location, and scope of such a facility.

Policy 4B-4
Specific training shall be developed and administered to all employees who handle solid waste.

Objective 4C
Coordinate closely with the Leon County on present and future projected solid waste disposal requirements for the University.

Policy 4C-1
The University shall establish a procedure and assign responsibility for regularly scheduled coordination meetings with appropriate State and County officials. FSU shall pursue any interlocal agreements or memoranda of understanding necessary to ensure that solid waste collection and disposal services will be supplied to the campuses to meet the future needs of the University.

Objective 4D
Continue to monitor solid waste facilities and procedures to locate deficiencies and provide for future needs. Adhere to the Local Mitigation Strategy to ensure adequate disaster preparedness and response.

Policy 4D-1

FSU will continue to enhance the operations of the existing Recycling Center and provide adequate facilities as needed. As conditions change, the University shall amend the adopted Campus Master Plan to identify said improvements, and to establish the timing and phasing requirements and priorities for the improvements.

Policy 4D-2
Annually review future construction programs and priorities for deficiency remediation as part of the capital improvements requirements and procedures of the University to ensure capacity.

Policy 4D-3
The University's level of service (LOS) standard will be the same as the City of Tallahassee, which is currently 6.05 pounds/capita/day and will grow to 6.90 pounds/capita/day by the year 2005, as outlined below:

Year	LOS
1994	6.05
1995	6.15
1996	6.25
1997	6.35
1998	6.45
1999	6.55
2000	6.65
2001	6.70
2002	6.75
2003	6.80
2004	6.85
2005	6.90
2006	6.95
2007	7.00
2008	7.05
2009	7.10
2010	7.15